First Southern New England Weather Conference

October 20-21, 2000

Pollard Middle School

Needham, MA

Sponsored by

The National Weather Service - Taunton, MA

Greater Boston Area Chapter of the American Meteorological Society

University of Massachusetts - Lowell Student Chapter of the American Meteorological Society

Blue Hill Science Center

Foreword

The program committee would like to welcome you to the First Southern New England Weather Conference!

The purpose of the conference is to enhance professional development and communication among private and public sector meteorologists, teachers, emergency management officials, and weather enthusiasts.

The conference features approximately 40 people making presentations on various topics on southern New England weather. As of October 1st, approximately 175 people have preregistered for the conference, and we anticipate that close to 300 people will attend.

We would like to thank all presenters, keynote speakers, session chairpersons, volunteers, and attendees for making this conference possible. A special thanks to the audio-visual, cafeteria, and custodial staffs at Pollard Middle School.

We hope you have an enjoyable and educational experience at the conference.

Sincerely,

The First Southern New England Weather Conference Organizing Committee:

Karen Way
President, University of Massachusetts-Lowell Student Chapter of the American Meteorological Society

Fred Allen, Jr.
Vice-President, University of Massachusetts-Lowell Student Chapter of the American Meteorological Society

Scott Kaplan
University of Massachusetts-Lowell Student Chapter of the American Meteorological Society

David Towle
Greater Boston Chapter of the American Meteorological Society

Charles T. Orloff
Executive Director, Blue Hill Observatory Science Center

Glenn Field
Warning Coordination Meteorologist, National Weather Service - Taunton, MA

Jim Lee

Science and Operations Officer, National Weather Service - Taunton, MA

Vendors & Organizations

Federal Emergency Management Agency

New England Weather Science/Precision Weather

Greater Boston Chapter of the American Meteorological Society

Blue Hill Science Center

University of Massachusetts Lowell Student Chapter
of the American Meteorological Society

Plymouth Community Intermediate School

Max Weather Instruments

EnvironmentRisk Group, Neilsen Internet Consulting Corporation

Dick Porter - The Thermometer Man

National Weather Association - Southern New England Chapter

AGENDA

FRIDAY, OCTOBER 20

5:30 PM - 7:00 PM	Registration

Plenary Session - Auditorium

7:00 PM	Welcome & Conference Goals: Jim Lee, National Weather Service - Taunton, MA
7:15 PM	The Vision for the National Weather Service Forecast Office in Taunton, MA Robert Thompson, National Weather Service - Taunton, MA
7:45 PM	KEYNOTE ADDRESS 1 Dr. Louis Uccellini, Director, National Center for Environmental Prediction, National Weather Service, Camp Springs, MD
8:45 PM	One if By Land, Two if By Sea New England's Disastrous Storms Throughout History: Glenn Field, National Weather Service - Taunton, MA
9:15 PM	Conference Closes Until Saturday Morning

SATURDAY, OCTOBER 21

7:30 AM - 8:00 AM	Conference Registration (continued)

Plenary Session - Auditorium

8:00 AM	Weather Briefing: Walter H. Drag, National Weather Service - Taunton, MA
8:15 AM	An Overview of The Blue Hill Observatory Science Center: Charles T. Orloff, Blue Hill Observatory Science Center
8:30 AM	KEYNOTE ADDRESS 2 Weather Channel 2000: Mish Michaels, WHDH-TV Channel 7 Boston & The Weather Channel
9:20 AM	Conference Logistics - Jim Lee, National Weather

Service - Taunton, MA

Morning Splinter Sessions

9:30 AM **Session 1: Severe Weather 1** - Session Chairperson: Walter H. Drag, National Weather Service - Taunton, MA

9:30 AM 1.1 An Examination of the Warning Process During the Severe Weather Outbreak of 2 June 2000 in Southern New England: Douglas C. Young, William T. Babcock, and Frank M. Nocera, National Weather Service - Taunton, MA

10:00 AM 1.2 NWS Taunton Warning Verification Statistics for 1999-2000: Joe DelliCarpini, National Weather Service - Taunton, MA

10:30 AM BREAK

10:45 AM 1.3 Southern New England Severe Weather: Glenn Field, National Weather Service - Taunton, MA (repeated in afternoon Session 9.2)

11:30 AM 1.4 WSR-88D Perspective of the August 10, 2000 Supercell in Southern New England: Joseph W. DelliCarpini, National Weather Service - Taunton, MA

12:00 Noon Session 1 Adjourn

9:30 AM **Session 2: Education 1** - Session Chairperson: Eleanor Vallier-Talbot, National Weather Service - Charleston, SC

9:30 AM 2.1 Hands-on Lessons from the American Meteorological Society's DataStreme Project: Teaching Teachers Weather to Bring to the Classroom; Eleanor Vallier-Talbot, NWS Charleston, SC (repeated in Afternoon Session 10.2)

10:00 AM 2.2 Project A.I.R.: Atmospheric Science Curriculum Modules for Middle and High School: John D. Pickle and Felicia Lee, Atmospheric and Environmental Research, Inc.

10:30 AM BREAK

10:45 AM 2.3 Clouds are White, the Sky is Blue: Weather as Poetry Made Easy for You; Heidi Ames, Station Avenue Elementary School, S. Yarmouth, MA

11:30 AM 2.4 Weather Education Resources for K-12 Teachers: William T. Babcock and Douglas C. Young, NWS Taunton

12:00 Noon Session 2 Adjourn

9:30 AM **Session 3: Meteorological Systems 1** - Session Chairperson: Alan Dunham, National Weather Service - Taunton, MA

9:30 AM 3.1 The Automated Surface Observation System (ASOS) Implementation in Southern New England: Alan Dunham, National Weather Service - Taunton, MA

10:00 AM 3.2 The New England Weather Observation Network: Bringing Vision to Reality; Jim Lee, National Weather Service - Taunton, MA

10:30 AM BREAK

10:45 AM 3.3 Weather Forecasting Considerations in Air Pollution Impacts: Michael P. Neilsen, EnvironmentRisk Group, Neilsen Internet Consulting Corporation (Presentation repeated in afternoon session 8.3)

11:45 AM Session 3 Adjourn

9:30 AM **Session 4: Climatology 1** - Session Chairperson: David R. Vallee, National Weather Service - Taunton, MA

9:30 AM 4.1 A Centennial Review of Major Land Falling Tropical Cyclones in Southern New England: David R. Vallee, National Weather Service - Taunton, MA

10:00 AM 4.2 The Blue Hill Observatory Climate Record: A Resource for Education and Research: Michael J. Iacono, Atmospheric and Environmental Research, Inc.

10:30 AM BREAK

10:45 AM 4.3 A Flash Flood Climatology of Southern New England: Preliminary Results for 1994-2000, David R. Vallee and Joseph W. DelliCarpini, National Weather Service - Taunton, MA

11:15 AM 4.4 High Wind Climatology for Southern New England from 1993 to 1999: Jim Lee, National Weather Service - Taunton, MA &

Dave Myrick, Cornell University

11:45 AM Session 4 Adjourn

9:30 AM **Session 5: National Weather Service Programs 1** - Session Chairperson: Ron Horwood, National Weather Service NERFC

9:30 AM 5.1 The Co-Operative Observer Network in Southern New England: William Simpson, National Weather Service - Taunton, MA

10:30 AM BREAK

10:45 AM 5.2 The NWS Quantitative Precipitation Forecast Process with Special Focus on the NWS Northeast River Forecast Center (RFC): Ron Horwood, National Weather Service NERFC

11:15 AM Session 5 Adjourn

9:30 AM **Session 6: Aviation Weather/Synoptics** - Session Chairperson: Jeffrey S. Tongue, National Weather Service - Upton, NY

9:30 AM 6.1 ASOS and Rawinsonde Observations of a Synoptic Scale Gravity Wave: Jeffrey S.Tongue, National Weather Service - Upton, NY

10:00 AM 6.2 The National Weather Service Center Weather Service Unit (CWSU): An Overview of Weather Support to the Air Traffic Control System; Weir Lundstedt, National Weather Service CWSU - Nashua, NH

10:30 AM BREAK

10:45 AM 6.3 Ceiling and Visibility Changes at Boston's Logan International Airport - A Challenge for Aviation Weather Forecasters: William T. Babcock, National Weather Service - Taunton, MA

11:15 AM 6.4 An Analysis of Orographically Induced Rainfall in Southern New England: David R. Vallee, National Weather Service - Taunton, MA

11:45 AM Session 6 Adjourn

9:30 AM **Session 7: Emergency Management Response to Weather** -

Session Chairperson: Pamela Pedersen, Federal Emergency Management Agency - Boston, MA

9:30 AM 7.1 FEMA Project IMPACT: Pamela Pedersen, Federal Emergency Management Agency - Boston, MA

10:00 AM 7.2 The October 1996 Floods: John Tommaney, Massachusetts Emergency Management Agency

10:30 AM BREAK

10:45 AM 7.3 Ice Storm 1998: Lynette Miller, Maine Emergency Management Agency

11:15 AM 7.4 Development of a Drought Management Plan for Massachusetts: Victoria J. Gartland and Linda J. Marler, Department of Environmental Management, and Mark P. Smith, Executive Office of Environmental Affairs

11:45 AM Session 7 Adjourn

12:00 NOON **LUNCH - CAFETERIA**

Plenary Session - Auditorium

1:00 PM KEYNOTE ADDRESS 3
The Latest on Tornadoes
Dr. Howard B. Bluestein, Professor of Meteorology, University of Oklahoma

Afternoon Splinter Sessions

2:00 PM **Session 8: Mesoscale Modelling/Air Pollution** - Session Chairperson: Dr. Frank Colby, University of Massachusetts - Lowell, MA

2:00 PM 8.1 The Eta-10km Model for Southern New England: Dr. Frank Colby, University of Massachusetts - Lowell, MA

2:30 PM 8.2 Real-Time Mesoscale Forecasts over Southern New England using the NCAR/Penn State Mesoscale Model (MM5): John M. Henderson and Thomas Nehrkorn, Atmospheric and Environmental Research (AER), Inc.

3:00 PM BREAK

3:15 PM 8.3 Weather Forecasting Considerations in Air Pollution Impacts: Michael P. Neilsen, EnvironmentRisk Group, Neilsen Internet Consulting Corporation (repeat of Presentation 3.3)

4:15 PM Session 8 Adjourn

2:00 PM **Session 9: Severe Weather 2** - Session Chairperson: Glenn Field, National Weather Service - Taunton, MA

2:00 PM 9.1 The Worcester Tornado; How it Would Be Viewed Today Dr. Howard B. Bluestein, Professor of Meteorology, University of Oklahoma

3:00 PM BREAK

3:15 PM 9.2 Southern New England Severe Weather: Glenn Field, National Weather Service - Taunton, MA (repeated from Morning Session 1.3)

4:00 PM Session 9 Adjourn

2:00 PM **Session 10: Education 2** - Session Chairpersons: William T. Babcock, National Weather Service - Taunton, MA/H. Michael Mogil, WeatherWorks

2:00 PM 10.1 Internet Weather: David Towle, Greater Boston Chapter of the American Meteorological Society

2:30 PM 10.2 Hands-on Lessons from the American Meteorological Society's DataStreme Project: Teaching Teachers Weather to Bring to the Classroom; Eleanor Vallier-Talbot, NWS Charleston, SC (repeated presentation from Morning Session 2.1)

3:00 PM BREAK

3:15 PM 10.3 Blue Hill Observatory - Women in Science (WINS) Workshop: Swirls and Whirls - H. Michael Mogil, WeatherWorks

4:15 PM Session 10 Adjourn

2:00 PM **Session 11: Meteorological Systems 2** - Session Chairperson: Jason Franklin, National Weather Service - Taunton, MA

2:00 PM 11.1 New England Weather - A Satellite Imagery Perspective: H.

Michael Mogil, Educational Weather Services

3:00 PM BREAK

3:15 PM 11.2 An Overview of NOAA Weather Radio: Jason Franklin, National Weather Service - Taunton, MA

3:45 PM Session 11 Adjourn

2:00 PM **Session 12: Climatology 2** - Session Chairperson: Joseph W. DelliCarpini, National Weather Service - Taunton, MA

2:00 PM 12.1 A Centennial Review of Major Land Falling Tropical Cyclones in Southern New England: David R. Vallee, National Weather Service - Taunton, MA (repeated presentation from Morning Session 4.1)

2:30 PM 12.2 Severe Weather Climatology for Southern New England from 1993 to 1999: Jim Lee, National Weather Service - Taunton, MA & Tim Trudel, Lyndon State College

3:00 PM BREAK

3:15 PM 12.3 Weather in New England in 1785: Lou McNally, WMTW-TV Channel 8 Portland, ME & The Institute for Quaternary Studies, University of Maine - Orono

4:00 PM Session 12 Adjourn

2:00 PM **Session 13: National Weather Service Programs 2** - Session Chairperson: Rob Macedo, Southern New England Amateur Radio Emergency Services Coordinator

2:00 PM 13.1 The Role of Amateur Radio in the NWS Taunton Skywarn Program: Rob Macedo, Southern New England Amateur Radio Emergency Services Coordinator

3:00 PM BREAK

3:15 PM 13.2 A Day on Duty at the National Weather Service in Taunton: William T. Babcock, National Weather Service - Taunton, MA

3:45 PM Session 13 Adjourn

2:00 PM **Session 14: Careers in Meteorology** - Session Chairperson:

Karen Way, University of Massachusetts - Lowell Student Chapter of the American Meteorological Society

2:00 PM 14.1 Who Wants to be a Meteorologist? A Session Targeted for High School and College Students Thinking About a Career in Meteorology: Jim Lee, National Weather Service - Taunton, MA

2:30 PM 14.2 Meteorological Careers in the Private Sector: Michael P. Neilsen, EnvironmentRisk Group, Neilsen Internet Consulting Corporation

3:00 PM BREAK and Session 14 Adjourn

2:00 PM **Session 15: Marine Weather** - Session Chairperson: John G.W. Kelley, NOAA/National Ocean Service

2:00 PM 15.1 High-Resolution Meteorological Analyses and Forecasts for the Narragansett Bay Region: John G.W. Kelley, NOAA/National Ocean Service

2:30 PM 15.2 The NWS Marine Prediction Center's Role in Providing Forecast Support for the Egypt Air Flight 990 Recovery Effort: Joe Sienkiewicz, NWS Marine Prediction Center

3:00 PM BREAK

3:15 PM 15.3 The NASA SeaWinds Scatterometer: An Eye on Coastal Wind Fields: S. Mark Leidner, Atmospheric and Environmental Research, Inc.

3:45 PM Session 15 Adjourn

4:00 PM ***Plenary Session - Auditorium***

4:00 PM KEYNOTE ADDRESS 4
No El Nino or La Nina - What Does "La Nada" Mean This Winter?
Joe D'Aleo, Chief Meteorologist, Intellicast.com

4:45 PM Conference Wrap-Up and Critique

5:00 PM CONFERENCE ADJOURN

KEYNOTE ADDRESS 1

Dr. Louis Uccellini
Director, National Center for Environmental Prediction
National Weather Service

NOTES:

KEYNOTE ADDRESS 2

Weather Channel 2000

Mishelle Michaels
WHDH-TV 7 Boston & The Weather Channel

NOTES:

1.1 An Examination of the Warning Process During the Severe Weather Outbreak of 2 June 2000 in Southern New England

Douglas C. Young, William T. Babcock, and Frank M. Nocera

National Weather Service Forecast Office
Taunton, Massachusetts

On 2 June 2000, a widespread severe weather outbreak affected southern New England with a concentration in western Massachusetts. The heaviest damage took place in Northampton, Hampshire county, where it was determined that an F1 tornado and microburst occurred.

Our presentation will begin with a review of the environmental conditions that precluded and persisted during this event, and the damage that followed. We will then discuss how the National Weather Service (NWS) Taunton Advanced Weather Interactive Processing System (AWIPS) and Doppler radar were used to aid the warning process by detecting storm rotation and indicating the potential for large hail and damaging straight-line wind. Furthermore, the success of the NWS in providing early warning detection to the public will be examined in light of the outstanding coordination and communication that prevails within the NWS and its outside entities.

1.2 NWS Taunton Warning Verification Statistics for 1999-2000

Joseph W. DelliCarpini
National Weather Service - Taunton, MA

The National Weather Service's warning verification program has undergone significant changes in the past two years. Many of these changes have been focused on winter weather verification, where a nationally standardized program did not exist until 1998. National statistics are now maintained for all winter weather watches and warnings, as well as high wind warnings. Similar to warm season severe weather statistics, the winter weather program focuses on Probability of Detection, which is the ratio of warned events to the total number of events; False Alarm Ratio, defined as the ratio of unverified warnings to total warnings issued; and Critical Success Index, which is the ratio of warned severe events to the sum of severe events and unverified warnings.

A nationally implemented verification program gives a measurement of performance, identifies areas where training may be needed, and indirectly shows where additional data sources should be placed.

This presentation will examine NWS Taunton's statistics for the 1999-2000 winter weather season and the 2000 convective season. Both sets of verification scores will be compared with previous years, as well as with averages of all offices nationwide. A brief summary of severe events will also be shown.

1.3 & 9.2 Severe Weather in Southern New England

Glenn Field
Warning Coordination Meteorologist
NWS Taunton, MA

Severe weather in southern New England?? C'mon -- that never happens here! The truth is that baseball size hail fell in Richmond, RI and Ellington, CT in the past 5 years; one of the deadliest tornadoes in U.S. history hit Worcester in 1953; a wooden 4x4 was driven through a car in the Great Barrington, MA tornado; the Swanzey, NH fairgrounds were destroyed by a recent tornado; 104 mph downburst winds injured 60 in Brockton, MA in 1996; flash floods from thunderstorms have washed out roads in western MA.

Many of the above examples will be shown, along with some NWS Doppler Radar imagery, in a humorous, entertaining slide show. In addition, lightning safety will be discussed and a few myths dispelled, such as opening the windows when a tornado is about to strike.

1.4 WSR-88D Perspective of the August 10, 2000 Supercell in Southern New England

Joseph W. DelliCarpini
NOAA/NWS Taunton, MA

A rare nocturnal supercell formed over eastern New York State during the late evening of August 9th , 2000, and tracked east across southern New England prior to dawn on August 10th. The storm developed in a moderately unstable airmass ahead of a cold front, with added support from a strong upper level jet, and intensified rapidly over Hartford County, Connecticut, where it encountered an environment featuring greater instability and increased low level shear. At the storm's peak, it exhibited a classic bounded weak echo region signature, with maximum reflectivities over 65 dbz and cell-based VILs over 70 kg/m2. Velocity data showed the presence of a deep and persistent mesocyclone as the storm passed over northern Rhode Island, whose depth reached a maximum of nearly 15,000 feet. Most of the damage associated with this supercell was confined to a narrow corridor from northeast Connecticut into northern Rhode Island and southeast Massachusetts. There were many reports of golf ball size hail, and scattered occurrences of downed trees, tree limbs, and wires.

This presentation will focus on data from the WSR-88D Doppler Radar in Taunton, MA, and from the FAA Terminal Doppler Weather Radar in Weymouth, MA. Reflectivity and velocity products from both radars will be used to show the evolution of this storm, as well as describe the role both radar systems played in the warning decision process.

2.1 & 10.2 Hands-On Lessons from the American Meteorological Society's DataStreme Project:
Teaching Teachers Weather to bring to the Classroom

Eleanor Vallier-Talbot
NOAA/NWS Charleston, SC
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Charleston, SC 29406-6162
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The National Weather Service (NWS) is an important partner in educational efforts for the public, including the K-12 education community. One of these efforts is the American Meteorological Society's (AMS) DataStreme Project, a distance learning graduate level class for K-12 educators. A part of the AMS' pre-college education initiative called Project ATMOSPHERE, the DataStreme Project has trained nearly 4500 teachers nationwide since the fall of 1996, including over 700 teachers participating in 94 Local Implementation Teams (LIT) throughout 44 states during the Spring 2000 offering. DataStreme is funded by a grant from the National Science Foundation, along with the assistance of AMS members, professional and broadcast meteorologists, and the National Weather Service. Several NWS offices, including Charleston, participate in LITs, teaching K-12 educators the basics of weather. Electronically transmitted near real time weather data and learning materials are combined with printed lessons to focus on the study of a variety of atmospheric topics, including upper air soundings, satellite interpretation, thunderstorms and hurricanes, just to name a few. Upon completion of the course, the LIT participants receive graduate credit, and become Weather Education Resource Teachers for their school and district. They bring their newly acquired knowledge back to the classroom by incorporating it into their curricula, and share this information with other teachers by way of peer training sessions and conference presentations.

During this presentation, the author will give a brief description of the AMS' Education Initiatives, including DataStreme, the Maury Project, and the new distance learning class called Water in the Earth System (WES). After that, the author will conduct a training session using some of the DataStreme materials. Attendees of this session will be shown how temperature and air pressure patterns are found on weather maps, and how symbols on surface weather maps are read. Copies of materials from the DataStreme Project will be provided, as well as other Internet education resources that teachers can use to bring weather to the classroom.

AMS Education Initiatives: http://www.ametsoc.org/amsedu/index.html
What is DataStreme? http://www.ametsoc.org/dstreme/extras/overview.html

2.2 Project A.I.R.: Atmospheric Science Curriculum Modules for Middle and High School"

John D. Pickle and Felicia Lee
Atmospheric and Environmental Research, Inc.
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With support from the NASA/Jet Propulsion Laboratory (JPL) Tropospheric Emission Spectrometer (TES) project, we created a series of twelve atmospheric science curriculum modules for grades 7-12. Our collaboration, known as Project A.I.R. (Atmospheric Investigations and Resources), consists of Atmospheric and Environmental Research, Inc. (AER), Boston University's Science and Mathematics Education Center, and a group of southern New England middle and high school science teachers. The materials were presented in a series of workshops to middle school and several elementary school teachers in the Arlington, MA public schools and were rewritten based on the feedback from the teachers.

The modules are based on the National Science Education Standards with a framework drawn from the Learning Cycle (Marek & Cavallo, 1997) where educational experiences are divided into three stages: concept exploration (student-centered, open-ended, and minimally guided activities), concept development (emphasis shifts toward teacher-directed learning), and concept application (testing ground for ideas and reinforcement). Student and teacher versions are available to make copying student lessons easier for the teachers, while expanded background material and insights into the assessment questions are available to the teachers.

The twelve modules can be divided into two large groups: "Atmosphere Inside the Classroom" which focus on temperature, pressure, moisture, and chemical composition within the classroom; and "Atmosphere Outside the Classroom" which deals with wind, clouds, and the influence of spatial and temporal scales on the analysis of temperature, pressure, moisture, and winds. Atmospheric parameters are measured using simple, inexpensive instruments that the students build and learn to calibrate and use. Data analysis is emphasized throughout the materials to extend ownership of the data that are collected and to provide extensive exploration to the students. Data that cannot be measured by the students are available in the appendices in several electronic formats. This allows teachers to focus on data analysis rather than data retrieval and formatting challenges. Teachers' data sets are available with answers, insights, and analyses.

The materials are available for free on the Internet at:
http://www.aer.com/products/productfr.html

2.3

Clouds are White, the Sky is Blue: Weather as Poetry Made Easy for You

Heidi Ames
Station Avenue Elementary School
S. Yarmouth, MA

Target Audience: Elementary Teachers

After teaching simple cloud identification, teachers will learn how to create two different art centers, making clouds with both tempera paint and cotton balls. Once the art component is completed, we will use our visuals to write poetry. Students will love turning science into a creative mode, while at the same time learning the three basic cloud types. Reluctant writers will see how simple it is to create non-rhyming poetry using color and sensory images. These activities make a wonderful bulletin board or hallway display.

2.4 Weather Education Resources for K-12 Teachers

William T. Babcock & Douglas C. Young
National Weather Service
Taunton, MA

The weather affects all of us every day. This is something we learn at an early age. Because of this, many of our children's first questions are about the atmosphere: "Why is the sky blue?", "Where does the rain come from?", "What makes the wind blow?", "What makes a rainbow?", "Will we have school tomorrow?".

Explaining the weather can be difficult for weather professionals, let alone someone whose training and expertise is in another area. Despite that difficulty, it is important for students to understand basic concepts about the weather. These concepts will aid the future citizens in a range of situations...from evaluating public debate on environmental issues to recognizing dangerous weather and moving to a place of safety.

This presentation will bring some basic weather information to K-12 teachers, allowing them to teach the weather with more confidence. The presentation will also demonstrate to teachers some of the resources that are available to them both in teaching weather and using weather to teach other subjects. The talk will look at both Internet and non-Internet resources; thus, there will be something for both electronic and non-electronic classrooms.

3.1 The Automated Surface Observation System (ASOS) Implementation in Southern New England

Alan Dunham, National Weather Service - Taunton, MA

3.2 The New England Weather Observation Network: Bringing Vision to Reality

Jim Lee
National Weather Service - Taunton, MA

In late 1998, the state climatologists from the New England states, officials representing the five National Weather Service Forecast Offices serving New England, and other interested scientists, gathered to discuss the need for a high resolution weather observation system across the six-state region. There was unanimous agreement among these scientists that the implementation of a densely-spaced network of automated weather observing stations within New England would benefit the quality-of-life of New Englanders, expand the climate record, and provide strong economic and educational benefits to the community.

This presentation will present the vision of bringing 21st Century environmental monitoring to New England in the form of the New England Weather Observation Network. The network has the capability to help protect life and property, to save New England businesses and citizens money by reducing energy consumption, and to help weather-sensitive industries monitor the climate and environment at more frequent and densely spaced intervals than ever before. The New England Weather Observation Network will also help our scientists of the future by giving students valuable data to reinforce scientific and mathematical foundations taught in grades K-12 and in higher education.

3.3 Weather Forecasting Considerations in Air Pollution Impacts

Michael P. Neilsen
EnvironmentRisk Group
Neilsen Internet Consulting Corporation

Impacts from both short and long term weather events influence air pollution impacts from stationary and mobile sources, sometimes resulting in extreme conditions. Using graphs and photographs, the presentation will briefly explain how thermal and wind conditions influence impacts from these sources using six stability classes originally described by NOAA veteran Bruce Turner for air pollution modeling purposes. The presentation will also show photos of meteorological monitoring equipment used in the measurement of these parameters, and briefly describe quality assurance techniques used. The author will then describe his role as the consulting meteorologist during a major chemical accident at a large chemical refinery in New Jersey.

4.1 & 12.1 A CENTENNIAL REVIEW OF MAJOR LAND FALLING TROPICAL CYCLONES IN SOUTHERN NEW ENGLAND

David Vallee
National Weather Service Forecast Office
Taunton, Massachusetts 02780

Hurricanes and tropical storms are no strangers to southern New England. Forty such storms have affected the region since 1900, either making landfall along the coast or passing close enough over the offshore waters to spread tropical storm or hurricane force conditions into the area. Of these forty systems, twelve made landfall along the shore of southern New England, each displaying remarkably similar characteristics with regard to their acceleration, and placement of high winds, rains and coastal flooding with respect to the storm track. This paper will review the climatology of Southern New England Tropical Cyclones since 1900, focusing on the similarities of the twelve land falling systems with regard to their forward motion and distribution of wind, flooding rainfall and devastating storm surge.

4.2 The Blue Hill Observatory Climate Record: A Resource for Education and Research

Michael J. Iacono

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In 1885, an extensive record of weather and climate measurements began at the Blue Hill Observatory in Milton, Massachusetts with the goal of establishing an unobstructed observing site and studying wind speeds and precipitation on the summit. More than 115 years later, this climate record has grown into a substantial and largely untapped resource for education and research in the science of meteorology. Daily observations have been maintained for temperature, precipitation, snowfall, wind speed and direction, pressure, and sunshine for the full period of record, and data are available for shorter time periods for cloud cover, relative humidity, and other quantities. In many cases, the measurements have been made with instruments very similar to those used a century ago, and they reflect in great detail the local changes that have occurred over that time.

For example, since 1885 there has been a two-degree F increase in surface temperature and a slight increase in precipitation. A dramatic drop in wind speed has occurred over the last twenty years, which is likely due to the unhindered vegetation growth on the hill. The Blue Hill record now represents one of the oldest and most homogeneous meteorological records in North America. The completeness and quality of this data record makes it especially appropriate for widespread use as a tool for education and research in meteorology. The Blue Hill climate observations can be packaged and made available to middle or high school science teachers for use in the classroom as a means of discussing climate change and allowing students to discover for themselves the importance of such measurements. In addition, these data could contribute to a wide variety of research topics from climate change to a comparison between the automated (ASOS) measurements and the traditional manual observations. The Blue Hill record is a unique and extensive resource that can contribute to increasing public awareness and scientific understanding of the atmosphere.

4.3 A Flash Flood Climatology of Southern New England: Preliminary Results for 1994-2000

David R. Vallee and Joseph W. DelliCarpini
NOAA/NWS Taunton, MA

The National Weather Service in Taunton, Massachusetts assumed its Hydrologic Service Area (HSA) in November, 1994, which closely resembles its County Warning Area (CWA) but also includes a part of southern Vermont and southern Connecticut. Flash Flood Warnings, unlike mainstem River Flood Warnings, come under the office's short-fused warning program, and are issued according to the CWA.

For purposes of this study, flood events and related warnings have been separated into two categories: flash flood, which includes all flooding that occurs in the 0 to 12 hour time frame and is not strictly limited to true flash flooding associated with short duration heavy rainfall; and flood, which is defined as all flooding that occurs in 12 to 24 hours and is generally associated with mainstem river flooding. A comprehensive database was built consisting of all flash flood events and warnings issued since the present HSA was begun in November, 1994, in order to be combined with a river flood climatology at a later date. The data was subdivided into events by county, month, and time of day, and verification statistics were computed for each county.

Although some contamination was evident from the flooding of October, 1996 and June, 1998, the data clearly shows the areas most susceptible to flash floods include northeast Connecticut, central and western Massachusetts, and southern New Hampshire. These areas feature hilly terrain, are prime areas for convective development, and receive orographically enhanced precipitation during longer duration episodes. Farther east across Rhode Island and the remainder of Massachusetts, a true flash flood is less likely due to terrain which is less hilly. Many of the small streams tend to respond more slowly, hence a greater occurrence of a slower evolving flood than flash flood, which still is considered for this study.

This presentation will focus on these preliminary results, and also go into more detail on the flash flood verification program. Strengths and weaknesses of the office's flash flood program will be discussed, as well as future plans of this study.

4.4 High Wind Climatology for Southern New England From 1994 to 1999

James E. Lee
NOAA/NWS Forecast Office
Taunton, MA 02780

David T. Myrick
Cornell University
Ithaca, NY

Southern New England is an region of the U.S. that is prone to high wind, most likely due to the confluence of the warm waters of the Atlantic Ocean and colder arctic air. High wind poses a significant threat to life and property damage, as well as posing an adverse economic impact on the construction, air transportation, and maritime industries. For the purpose of this research, high wind is considered as a measured wind gust greater or equal to 50 knots, wind that produces property damage, injury, or death, which did not originate from convection.

Additionally, the National Weather Service (NWS) Forecast Office in Taunton, Massachusetts has spent considerable resources in spotter training in association with the NWS modernization. The spotter population in southern New England has tripled during the period from 1994 to 1999. Also, there has been a large increase in around-the- clock automated weather observation equipment. Both of these sources provide an excellent basis of high wind reports that occur in southern New England.

This presentation will report the results of a high wind climatology for southern New England. The climatology will be broken down by county, month, and time-of-day. Additionally, the climatology will include favored synoptic settings for those days when high wind events occurred.

5.1 The NWS Co-Operative Observer Network in Southern New England

William Simpson, National Weather Service - Taunton, MA

5.2 The NWS Quantitative Precipitation Forecast Process with Special Focus on the NWS Northeast River Forecast Center (RFC)

Ron Horwood
NWS NERFC

The introduction will briefly discuss why QPF is a vital part of hydrometeorological forecasting...focusing particularly on the river forecasting aspect but also other commercial industries that rely upon accurate QPF (i.e. farming, reservoir and power companies etc). I will also cover changes in the QPF process within the NWS over the last year (shift from NWSFO to RFC).

Part one will discuss the QPF preperation process here at the NERFC. I will basically show and discuss how the forecaster composes a QPF forecast daily...focusing on things like satellite/radar trends, interpreting model guidance and coordination between intra-agency offices.

Part two will focus on the dissemination of the QPF to NWS and other users. I will discuss the software we use and the products we disseminate (both graphical and text QPF products internally and externally).

Finally...to wrap up the presentation...I am thinking about showing graphically the difference between river forecasts with no QPF and significant QPF and show how this scenario affects a particular forecast point, maybe something on the lower Connecticut River like Hartford.

6.1 ASOS and Rawinsonde Observations of a Synoptic Scale Gravity Wave

Jeffrey S. Tongue
NOAA/NWS
Upton, NY

The amount of real-time meteorological data available to the operational meteorologist continues to grow at an exponential rate as both technological and telecommunication advances occur. Analyses of “standard” synoptic scale hourly surface observations has been common practice for decades as has that of rawinsonde data collected at 12 hour intervals. While emphasis has been placed on increasing the spacial resolution of these types of data through surface mesonets and remote sensing techniques, lesser emphasis has been placed on increasing the temporal resolution of these in-situ “traditional” data sets.

Automated Surface Observing Systems (ASOS) only disseminate data routinely once an hour. Though these data are calculated and archived on a time scale of every five minutes, they are not currently routinely used in real-time. Rawinsonde data is currently only routinely collected twice a day and there are proposals to lessen this. While increasing the temporal resolution of the synoptic rawinsonde data network is cost prohibitive, their supplementation with aircraft soundings is a valuable alternative.

An examination of five minute ASOS data and Rawinsonde data collected at six hour intervals combined with aircraft soundings during the East Coast snow storm of January 25, 2000 shows that increased temporal resolution of the “traditional” observing systems has tremendous value to the operational meteorological community. The increased temporal resolution of the traditional data sets in this cased dramatically shows the passage of a large scale gravity wave.

6.2 The National Weather Service Center Weather Service Unit (CWSU): An Overview of Weather Support to the Air Traffic Control System

Weir Lundstedt
National Weather Service CWSU - Nashua, NH

The Center Weather Service Unit (CWSU) was establish in 1981 to provide weather support to Air Traffic Controllers in an effort to help provide for the safe and efficient movement of air traffic across the National Airspace System (NAS). There are 26 CWSU's located at Air Route Traffic Control Centers (ARTCC) throughout the United States which are staffed by National Weather Service meteorologists. An overview of weather support and services provided by the CWSU at the Boston Center ARTCC will be presented along with an explanation of the air space which is controlled by Boston Center.

6.3 Ceiling and Visibility Changes at Boston's Logan International Airport: A Challenge for Aviation Weather Forecasters

William T. Babcock
National Weather Service
Taunton, MA

The aviation community has a strong need for accurate weather forecasts. Aircraft fly through the weather; unexpected conditions can, without exaggeration, be deadly for both the pilots and their passengers. With this in mind, National Weather Service forecasters issue Terminal Aerodrome Forecasts (TAFs) for several hundred airports in the United States. By international agreement, similar forecasts are issued by other nations as well. These forecasts cover the expected cloud ceiling, visibility, and wind for the succeeding 24 hours.

As weather forecasting improves and as increasing numbers of aircraft take to the skies, it becomes important for us as forecasters to improve the reliability and precision of our aviation forecasts. Indeed, the Federal Aviation Administration has come forward with suggested levels of precision that it sees as necessary for future aviation operations. In assessing our ability to meet these goals, it is important for us to take a clear look at the actual changes in ceiling and visibility and then compare these changes with the precision and accuracy of the observed and forecast data available to the forecaster.

This presentation will do the first of these two steps. It will look at the hourly changes in cloud ceiling and in visibility as measured at Logan International Airport in Boston, Massachusetts. The hourly observations will come from the Solar and Meteorological Surface Observation Network database, printed on CD-ROM[1], for the years 1961 to 1990. Changes in ceiling and visibility will be examined in one-hour, two-hour, and three-hour time periods. These changes will be viewed at all levels that have an important impact on takeoff and landing operations[2]. The presentation will conclude with a look at the implications this may have on future Boston TAFs.

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[1] U. S. Department of Commerce, National Climatic Data Center, and U.S. Department of Energy, National Renewable Energy Laboratory.

[2] Ceiling at or below 3000 feet, visibility at or below 5 miles

6.4 An Analysis of Orographically Induced Rainfall in Southern New England

David Vallee
National Weather Service Forecast Office
Taunton, Massachusetts 02780

Synoptic scale storm systems producing greater than one inch of rainfall across southern New England are quite common from early fall through late spring. These systems often have favored areas of orographically induced heavier rainfall. This paper will identify the mechanisms favorable for orographically induced rainfall associated with these in southern New England. A decision tree will be formulated to allow the forecaster to identify these areas and to more accurately adjust rainfall guidance from numerical models to account for these orographic effects.

7.1 Project Impact: FEMA's Initiative for Building Disaster Resistant Communities

Pam Pedersen, FEMA, Mitigation Division

The Federal Emergency Management Agency initiative, Project Impact, seeks to change the way America deals with natural disasters. The goal of Project Impact is to reduce the personal and economic costs of disasters by bringing together community leaders, citizens, and businesses to prepare for and protect themselves against natural disasters. This effort is an investment that will enhance and strengthen the economic structure and long-term stability of communities, regardless of when disasters strike.

This presentation will give an overview of the initiative and show what is being done in Southern New England to make communities disaster resistant. The specific topic of hurricane preparedness and disaster prevention in Southern New England will be used as an example.

7.2 The October 1996 Floods

John Tommaney & Cris McCombs
Massachusetts Emergency Management Agency

This presentation will address what happened leading up to the event, the impacts caused by the flooding and how the disaster declaration progressed.

7.3 Ice Storm 1998

Lynette Miller, Maine Emergency Management Agency

7.4 Development and Implementation of a Drought Management Plan for Massachusetts

Victoria J. Gartland, Department of Environmental Management
Mark P. Smith, Executive Office of Environmental Affairs
Linda J. Marler, Department of Environmental Management

Low amounts of precipitation during the winter, spring, and summer of 1999 caused the Massachusetts Executive Office of Environmental Affairs' Director of Water Policy and the Massachusetts Emergency Management Agency's Director of Operations to convene a meeting of the state Drought Management Task Force in August 1999. Precipitation deficits were as much as 12 inches below normal over a 12-month period, in a state normally receiving 42 to 48 inches of annual precipitation. Streamflow was near record low levels in many regions of the state and ground water levels declined to below normal levels for months. Some moderate-sized public surface water supply reservoirs were reduced to levels of 60 to 70 percent of capacity. Many municipalities implemented water use restrictions or bans (focused on outdoor watering) to maintain their resources for drinking water and fire flow. Significant forest fires occurred during the summer of 1999 due to the low amounts of precipitation.

The Drought Management Task Force was composed of representatives from state and federal agencies that had concerns about water deficiencies. During its first meeting, the task force received status reports from agencies that monitor rainfall, streamflow, and ground water levels; regulate public and commercial/industrial water supplies; the state forest fire control officer; and food and agriculture representatives. This allowed the task force members to obtain a clear understanding of the situation, come to a conclusion on the status, and develop recommendations in preparation for future conditions. The Task Force decided that development of standard procedures would help facilitate response to future situations.

The Drought Management Plan was developed to guide state activities in response to drought and extended periods of dry weather. The plan outlines the responsibilities of various state and federal agencies, the lines of communications to be used, the general sequence of actions to be followed based on the severity of the situation, and outlines the powers available to local and state agencies. Through the task force members, a list of data that will be used to assess the severity of a drought condition was developed, and agency responsibilities and contact personnel for the information were identified. Various agencies were assigned responsibility for communicating with the public and municipalities. A method for assigning drought levels was developed that uses multiple data sources and indices. Data includes precipitation, ground water levels, and streamflow levels. Indices used include the Palmer Drought Index, the Crop Moisture Index, and the Fire Danger Level. Drought levels are defined based on the severity and duration of the data and indices. Drought levels will be determined on a monthly basis by state regions and counties and posted monthly on the Department of Environmental Management's internet web site.

KEYNOTE ADDRESS 3

The Latest on Tornadoes

Dr. Howard B. Bluestein, Professor of Meteorology, University of Oklahoma

NOTES:

8.1 Performance of the Workstation Eta Model

Dr. Frank Colby
Professor of Meteorology
University of Massachusetts Lowell

The Eta forecast model has been ported to a version which runs on a pc using Linux as the operating system, and made available to Science and Operations Officers (SOOs) at all the National Weather Service Offices. This model has been running operationally once per day at the Taunton, MA office with a 10 km grid spacing. We have verified some of these forecasts, both qualitatively and quantitatively. The results of this verification will be presented in this paper.

8.2 Real-Time Mesoscale Forecasts over Southern New England using the NCAR/Penn State Mesoscale Model (MM5)

John M Henderson and Thomas Nehrkorn
Atmospheric and Environmental Research (AER), Inc.

The MM5 model version 3.3 has been integrated into a fully automated forecasting system, including post-processing of the model data and posting of a suite of standard meteorological plots to the web (www.aer.com/forecast). The MM5 is run in real-time using NCEP's Eta model to initialize once-daily 48-h forecasts for a triply-nested domain centered over southeastern Massachusetts. Model grid spacing and land use/terrain field-resolution for domains 1, 2 and 3 are 30, 10 and 3.3-km, respectively. A standard package of physics and boundary layer options is used to complement the just-released (in version 3.3) RRTM radiation scheme that was developed at AER. When run in the above configuration, the MM5 is well-suited to capturing mesoscale atmospheric features common to New England.

We will present forecasts and their verification against observations for several cases of interest to southern New England. Included will be forecasts of precipitation that have been verified against mosaics of NEXRAD data in connection with a research project for hydrometeorological forecasting.

9.1 The Worcester Tornado: How it Would Be Viewed Today

Dr. Howard B. Bluestein
Professor of Meteorology, University of Oklahoma

10.3 Blue Hill Observatory - Women in Science (WINS) Workshop

Swirls and Whirls

H. Michael Mogil, CCM
How The Weatherworks
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Terms like tornado, hurricane, and winter storm all bring images of swirling masses of clouds. In this one hour hands-on session, especially designed for girls in the WINS (Women in Natural Sciences) program, participants will explore how these swirls form; they will also see how understanding these can help us understand other swirls in our lives.

Participants will examine weather satellite images (especially water vapor) and then replicate the swirl patterns using readily available household materials. They will also create a "pet tornado" and a hurricane in a bowl; in the process, they will examine some of the many variables that affect the rate of rotation in these swirling storms.

11.1 New England Weather - A Satellite Imagery Perspective

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New England can have some the world's worst weather or some of the world's best weather; regardless of the classification, New England has a lot of weather!!

This session will focus on that weather from a satellite imagery perspective. Using images obtained from GOES and/or polar orbiting satellites, we'll look at some interesting weather events that happened in New England and try to understand them. This will include "case studies" of strong northwest flow wind events, coastal storms, thunderstorms, fog, backdoor cold fronts, and much more. As needed, we'll bring in other data sets (radar, meteograms, surface and upper air charts, and soundings) to reinforce the interpretations obtained from satellite imagery alone. This won't be a passive workshop; participation is required!

Then we'll take a look at today's weather (from a satellite perspective, of course) to see if our interpretation approach can work outside of a "case study" framework.

In closing, you will receive a listing of key links to real-time satellite imagery on the web.

11.2 An Overview of NOAA Weather Radio

Jason Franklin
National Weather Service - Taunton, MA

NOAA Weather Radio (NWR) is a leading source of continuous weather information in the United States. From climate data to weather warnings, NWR broadcasts up-to-the minute weather information 24 hours per day, 7 days per week.

From its inception until the early 1990s, each National Weather Service office was responsible for manually recording and maintaining one or two NWR programs that served the local forecast area. Each program cycled through weather forecasts, warnings, and current observations every 5 to 7 minutes. During the mid 1990s, several National Weather Service offices were closed or merged, proportionately increasing the number of broadcast programs per office. For example, the Birmingham, AL National Weather Service office became responsible for 13 broadcast programs.

To alleviate this newly created and often overwhelming work load, an automated PC-based system was developed that converted text messages to synthesized voice. This new system, called the Console Replacement System (CRS), was deployed nationwide in 1998.

The National Weather Service Forecast office in Taunton, MA currently has NWR responsibility for all of southern New England. Transmitters are located near Worcester, MA; Hartford, CT; Providence, RI; Boston, MA; and Camp Edwards, MA. During the summer of 1999, surveys were distributed to listeners in southern New England. Almost 75% of the nearly 2800 respondents felt forecasts and warnings were most crucial, while other products such as marine weather and climate data proved popular with specialized groups. These results are currently being used to devise a broadcast cycle that will efficiently deliver weather information to meet the needs of today's diverse audience, while maintaining emergency preparedness.

12.2 Severe Storm Climatology for Southern New England From 1994 to 1999

James E. Lee
NOAA/NWS Forecast Office
Taunton, MA

Timothy J. Trudel
Lyndon State College
Lyndonville, VT

The National Weather Service (NWS) Forecast Office in Taunton, Massachusetts has spent considerable resources in spotter training in association with the NWS modernization. The spotter population in southern New England has tripled during the period from 1994 to 1999.

For this research, severe weather is considered as hail greater than 0.75 inches, damaging wind gusts, wind gusts measured greater than 50 knots, and tornado occurrence. It is believed that with the increase in trained spotter population, an improved basis for severe weather climatology has been gained since 1994.

This presentation will report the results of an updated severe storm climatology for southern New England. The climatology will be broken down by county, month and time-of-day. Additionally, the climatology will include favored synoptic settings for those days when widespread severe weather occurred.

12.3 THE WEATHER OF 1785

Lou McNally
WMTW-TV Channel 8 Portland, ME
&
The Institute for Quaternary Studies, University of Maine - Orono

Using the technique of forensic synoptic analysis (McNally, 1994), the weather of the year 1785, CE is reconstructed using both qualitative and quantitative data.

Quantitative data is used as a benchmark, but most of these data are sparse, and of marginal empirical value. Qualitative data from diaries, newspapers, ships' logs, military and other records of the time are used in conjunction with the quantitative data to reconstruct synoptic meteorological systems. Resolution is two maps per day for the entire year.

The year 1785, CE has been noted in paleoclimatological research as a proxy for conditions expected during the maximum of the Little Ice Age, and provides excellent insight into both the historical and meteorological parameters faced by the settlers of the time.

Diarists and records are included from central Maine, (Massachusetts at the time), New Hampshire, Massachusetts (many diarists), Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and Virginia, as well as records from trans-Atlantic crossings, military campaigns, and Canadian traders.

Inferences can be made regarding the position and intensity of the polar cell, jetstreams, and tropical and sub-tropical systems. Expectations for the weather and climate of southern New England in the event of rapid cooling are explored as well.

13.1 The Role of Amateur Radio in the NWS Taunton SKYWARN Program

Rob Macedo
Southern New England Amateur Radio Emergency Services Coordinator

This presentation will highlight the following topics:

- What Amateur Radio is and how it differs from GMRS, CB and other forms of radio communication.
- Why Amateur Radio Operators are pro-active in programs such as SKYWARN.
- How Amateur Radio Operators utilize technology and have adapted to the technological advances to make Amateur Radio a necessity in SKYWARN Activations.
- Go through several examples of how Amateur Radio has helped out in significant SKYWARN Activations over the past several years.
- Answer any questions and generate interest in the Amateur Radio Service and SKYWARN.

13.2 A Day on Duty at the National Weather Service in Taunton MA

William T. Babcock
National Weather Service
Taunton, MA

Approximately 40 people work at the National Weather Service (NWS) facility in Taunton. The facility, located in the Myles Standish Industrial Park in northern Taunton, houses both the Southern New England Weather Forecast Office and the Northeast River Forecast Center. The people at this facility have a variety of duties; chief among these is the timely issuance of warnings to protect life and property. Although most people are familiar with the concept of meteorologists forecasting the weather, a surprising number do not accurately realize the relationship of the National Weather Service to the meteorological community.

This presentation discusses the National Weather Service's relationship and responsibilities to the general public. The presentation does this by following the events of a normal day for the forecasters at the NWS office, explaining what they do and why they are doing it.

14.1 Who Wants to be a Meteorologist?
A Session Targeted for High School and College Students
Thinking About a Career in Meteorology

Jim Lee
Science and Operations Officer
National Weather Service - Taunton, MA

This session will provide an overview of strategies that might be taken by prospective students seeking a career in meteorology. Included will be recommended course work, an overview of institutes of higher learning that offer degrees in meteorology and atmospheric sciences, and prospects for future meteorologists.

An extensive question and answer period is planned, along with interaction from other professionals in the science.

14.2 Meteorological Careers in the Private Sector

Michael P. Neilsen
EnvironmentRisk Group
Neilsen Internet Consulting Corporation

The presentation will describe career opportunities for new meteorologists in the private sector apart from those offered in radio and TV broadcasting. Opportunities available in the following career areas will be described:

Forecasting weather for the broadcast media
Forecasting weather commercial airlines
Forecasting weather for commercial shipping
Forecasting weather for crop weather and commodities futures
Modeling air pollution impacts
Meteorological monitoring equipment

The presentation will explain the responsibilities meteorologist have in each of these career areas, and the education students should undertake to prepare for the career areas of their interest. The presentation will include the personal experiences of the author in weather forecasting and air pollution meteorology, including a special assignment as Chief Forecaster for the 1983 America's Cup Races in Newport, RI.

15.1 High-Resolution Meteorological Analyses and Forecasts for the Narragansett Bay Region

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Jeffery T. McQueen
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NOAA's National Ocean Service (NOS), Coast Survey Development Laboratory and the Office of Oceanic and Atmospheric Research's Air Resources Laboratory (ARL) will be implementing NOAA's Local Analysis and Prediction System (LAPS) for the Narragansett Bay watershed and adjacent coastal waters. LAPS will provide high-resolution (2-4 km), hourly atmospheric analyses and short-term forecasts for the Bay region. This will be done as part of a 3-year project sponsored by the National Ocean Partnership Program and lead by The University of Rhode Island and Drexel University. The primary goal of the project is to develop and demonstrate a real-time oceanographic nowcast/forecast system for the Bay. LAPS analyses and forecasts will be used as surface forcing for the oceanographic nowcast/forecast system. The Narragansett Bay LAPS will be implemented to ingest observations from traditional networks including surface airway stations, NWS Coastal-Marine Automated Network stations, NOS Physical Oceanographic Real-Time System surface meteorological stations, fixed buoys, and ships.

NOS will work closely with the NWS Weather Forecast Offices in Taunton, Massachusetts and Upton, New York and NOAA's Forecast Systems Laboratory to obtain and ingest observations from local mesoscale observing networks operated by state and educational institutions in Rhode Island and nearby Connecticut, Massachusetts and New York. NOS will use its experience in its implementation of LAPS for the Chesapeake Bay region to modify and test the analysis procedure for the Narragansett Bay region. ARL will focus on the predictive component of LAPS. It will implement a 2-4km grid domain over the region using a version of the non-hydrostatic workstation version of NCEP's Eta mesoscale atmospheric model or the Weather Research and Forecasting Model. The non-hydrostatic model will utilize the LAPS 3-D analyses for initial conditions with lateral boundary conditions provided by NCEP's operational Eta mesoscale model for North America. The knowledge obtained from the implementation, operation and evaluation of LAPS over Narragansett Bay will be shared with researchers for improving LAPS, including the use of a non-hydrostatic model in coastal marine applications.

15.2 The NWS Marine Prediction Center's Role in Providing Forecast Support for the EgyptAir Flight 990 Recovery Effort

Joe Sienkiewicz
Senior Forecaster
NWS Marine Prediction Center

On Sunday October 31, 1999, EgyptAir Flight 990 crashed into the North Atlantic south southeast of Nantucket. The crash site was within the Offshore Waters responsibility of the NWS Marine Prediction Center (MPC). Shortly after the crash, a meteorologist from the Marine Prediction Center deployed to the Recovery Task Force Command Center in Newport, Rhode Island. The Marine Prediction Center meteorologist teamed up with a Navy meteorologist to determine specific weather needs for the recovery effort. The MPC forecaster provided customized forecast support for the National Transportation Safety Board, Coast Guard, Navy,
Federal Bureau of Investigation, Public Health Service, and ships of the recovery effort, including NOAA's WHITING. A team of weather specialists working around the clock at MPC's home at the National Centers for Environmental Prediction in Camp Springs, Maryland supported the on-site forecaster at the Command Center by providing both text and graphical guidance. Forecasts were coordinated with the Naval Atlantic Meteorology and Oceanography Center in Norfolk, Virginia. Tailored forecasts in support of recovery operations were provided through November 19, 1999.

Specific forecast challenges for the waters south of New England during this time period will be discussed. In addition, observational and forecasting tools used by MPC forecasters will be highlighted.

15.3 The NASA SeaWinds Scatterometer: An Eye On Coastal Wind Fields

S. Mark Leidner

Atmospheric and Environmental Research, Inc.
Cambridge, MA 02139

On June 19, 1999, the NASA QuikSCAT spacecraft carrying the SeaWinds scatterometer was launched. SeaWinds is a space-borne, active microwave radar which can determine surface wind speed and direction over the world's oceans. Real-time access to the data has been made possible by cooperation between the Jet Propulsion Laboratory (Pasadena, CA), NOAA/NESDIS (Camp Springs, MD) and Atmospheric and Environmental Research, Inc. (Cambridge, MA).

Offshore winds are traditionally measured by reports from ships and buoys. But these in situ measurements fail to provide more than a handful of data points to infer the surrounding surface wind field. SeaWinds has an 1800 km swath which gives a near-instantaneous view of the winds over a very wide area. These data are useful for now-casting and assimilation to improve Numerical Weather Prediction. Examples of SeaWinds data off the New England coast will be presented.

KEYNOTE ADDRESS 4

No El Nino or La Nina - What Does "La Nada" Mean This Winter?

Joe D'Aleo
Chief Meteorologist, Intellicast.com

For the first time in several years, this winter is likely to be a neutral ENSO winter - in transition from the current 2 1/2 year La Nina towards the next El Nino (2001/02?). We are beginning to understand the typical weather patterns in El Nino or La Nina. What if anything historically happens in neutral years?